Montana Clinical Communication & Surveillance Report

MONTANA
CARDIOVASCULAR HEALTH AND DIABETES PROGRAMS

Montana Department of Public Health and Human Services
Chronic Disease Prevention and Health Promotion Program
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DISCOURAGING TRENDS IN CARDIOVASCULAR DISEASE RISK FACTORS AMONG MONTANA AMERICAN INDIANS COMPARED TO ALL MONTANANS, 1999 TO 2005

WHAT'S INSIDE

BACKGROUND

Heart disease and stroke were the second and fourth leading causes of death in the state of Montana in 2005, and significant disparities in cardiovascular health have been documented in American Indian communities across the state. Overall in Montana, American Indians experienced 20-30% higher rates of heart disease and stroke mortality compared to whites between 1994 and 2000.[1] Much of the excess cardiovascular mortality has been attributed to the epidemic of diabetes combined with high smoking rates in Montana's Indian communities.[2] In the most recent recommendations from the National Cholesterol Education Program, the 10-year risk of coronary heart disease in a person with diabetes was considered to be the same as the risk of someone who had already experienced a heart attack.[3] But a recent report from the Strong Heart Study of cardiovascular disease in American Indians from North and South Dakota, Oklahoma, and Arizona emphasized that even in the presence of diabetes, the number of cardiovascular risk factors in American Indians is very important. In the study, diabetes increased the risk of fatal and

non-fatal coronary heart disease in men (hazard ratio 1.99) and in women (hazard ratio 2.93). However, only those with multiple risk factors experienced a 10-year cumulative risk equivalent to persons with a history of coronary heart disease.[4]

The prevalence of cardiovascular disease risk factors has been increasing in Montana's Indian communities. This report updates the trends in cardiovascular risk factors with data from the American Indian adapted-Behavioral Risk Factor Surveillance System (BRFSS) conducted in 2005 and compares this data with the trends for the state as a whole.[5] In addition, the report presents data on the types of cardiovascular disease reported by American Indian respondents living on or near Montana's seven reservations in 2005.

METHODS

All data from the Montana statewide BRFSS are from 1999 to 2005. Centers for Disease Control and Prevention BRFSS protocols were followed for survey sampling and interview.[6,7] To ensure adequate representation of rural Montanans and American Indians, the sample was stratified among three regions. Survey response rates ranged from 71.7% in 1999 to 55.6% in 2005.

The Montana Department of Health and Human Services, in collaboration with the Billings Area Indian Health Service, conducted telephone surveys among American Indians living on or near Montana's seven reservations in 1999, 2001, 2003 and 2005. These telephone surveys were adapted from the statewide BRFSS. Trained interviewers made telephone calls to a random sample of households with three-digit telephone prefixes located on or near the seven reservations in Montana. The number of completed telephone calls for each of the surveys was proportional to the number of American Indian households on each reservation. Based on the 2000 census, 56,038 American Indian and Alaska Natives were living in Montana, the majority of whom lived on the seven reservations (59%).

For both the statewide BRFSS and American Indian adapted-BRFSS, adults 18 years and older were eligible to participate in the telephone surveys. One randomly selected adult from each sampled household was selected to participate in the survey. Respondents were asked if a physician or healthcare professional ever told them they had diabetes, high blood pressure, or high cholesterol. Respondents who reported pre-diabetes/borderline diabetes were not considered to have diabetes. Those female respondents who had been told by a physician or other healthcare professional that they had gestational diabetes or high blood pressure during pregnancy were not considered to have diabetes or high blood pressure respectively. Respondents who reported that they smoked cigarettes every day or some days were categorized as current smokers. Self-reported height and weight were used to calculate a body mass index (BMI, kg/m^2), and a value of ≥ 30.0 kg/m^2 was categorized as obese.

Respondents who reported a history of a myocardial infarction or heart attack, angina or coronary heart disease, or stroke were categorized as having cardiovascular disease (CVD).

For both the American Indian adapted-BRFSS and the statewide BRFSS, data analysis were completed using SPSS V.14.0 and SPSS V.12.0 for Windows Complex Samples software (SPSS Inc., Chicago IL), respectively. For the American Indian adapted-BRFSS surveys, approximately 1,000 Montana Indian adults were surveyed. Chi-square tests were used to compare differences in linear trends of CVD and cardiovascular risk factors from 1999 to 2005. For the statewide BRFSS survey, the sample ranged from1,798 in 1999 to 4,983 in 2005. Prevalence estimates and 95% confidence intervals were computed using sample weights provided by CDC. Where confidence intervals do not overlap, differences between years are statistically significant.

RESULTS

Among Montana's adult Indian population, the prevalence of diabetes increased significantly from 12% in 1999 to 19% in 2005. Although the prevalence of diabetes reported by adult Montanans remained stable at approximately 6% during the same time period, Montana's Indian adults reported diabetes twice as frequently as all Montanans in 1999 and over three times more frequently in 2005. (Figure 1)

Figure 1. Prevalence of DIABETES for all Montanans and Montana American Indians, 1999-2005

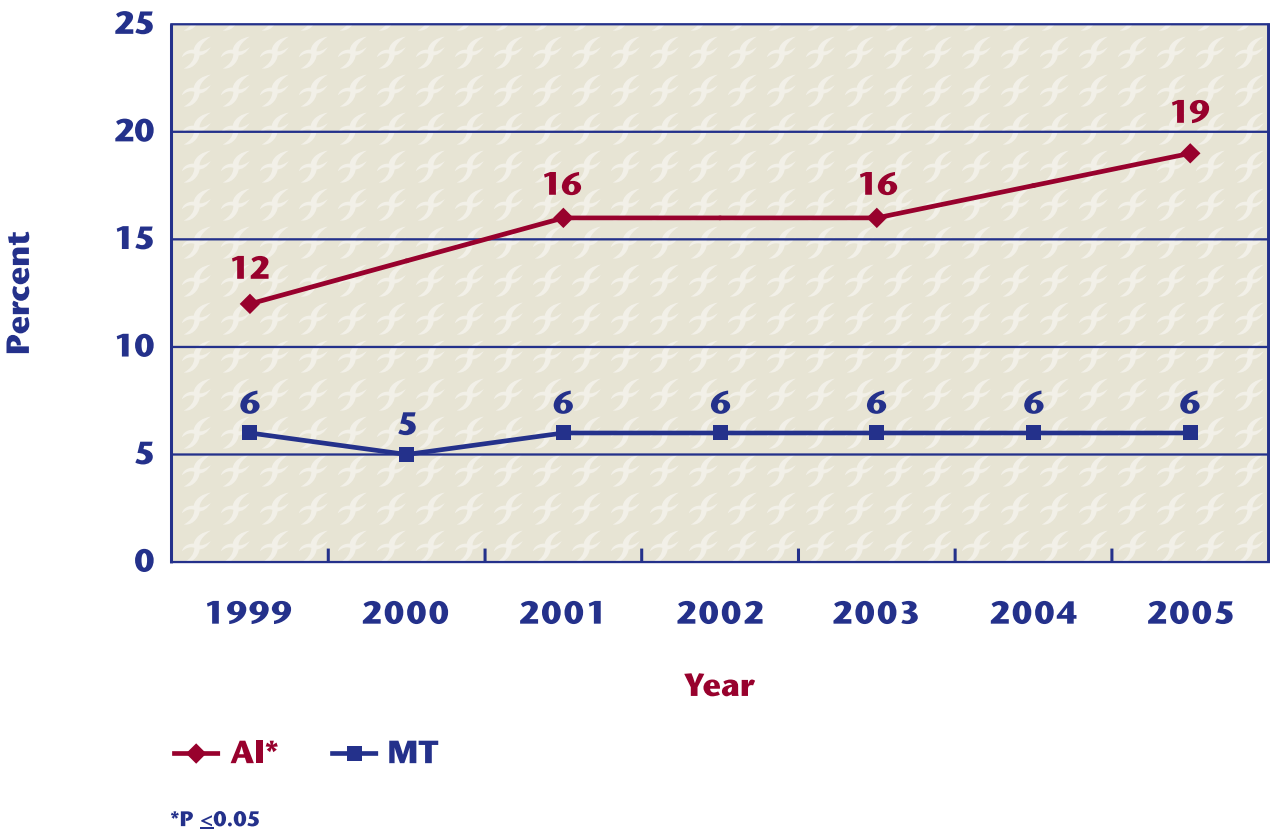
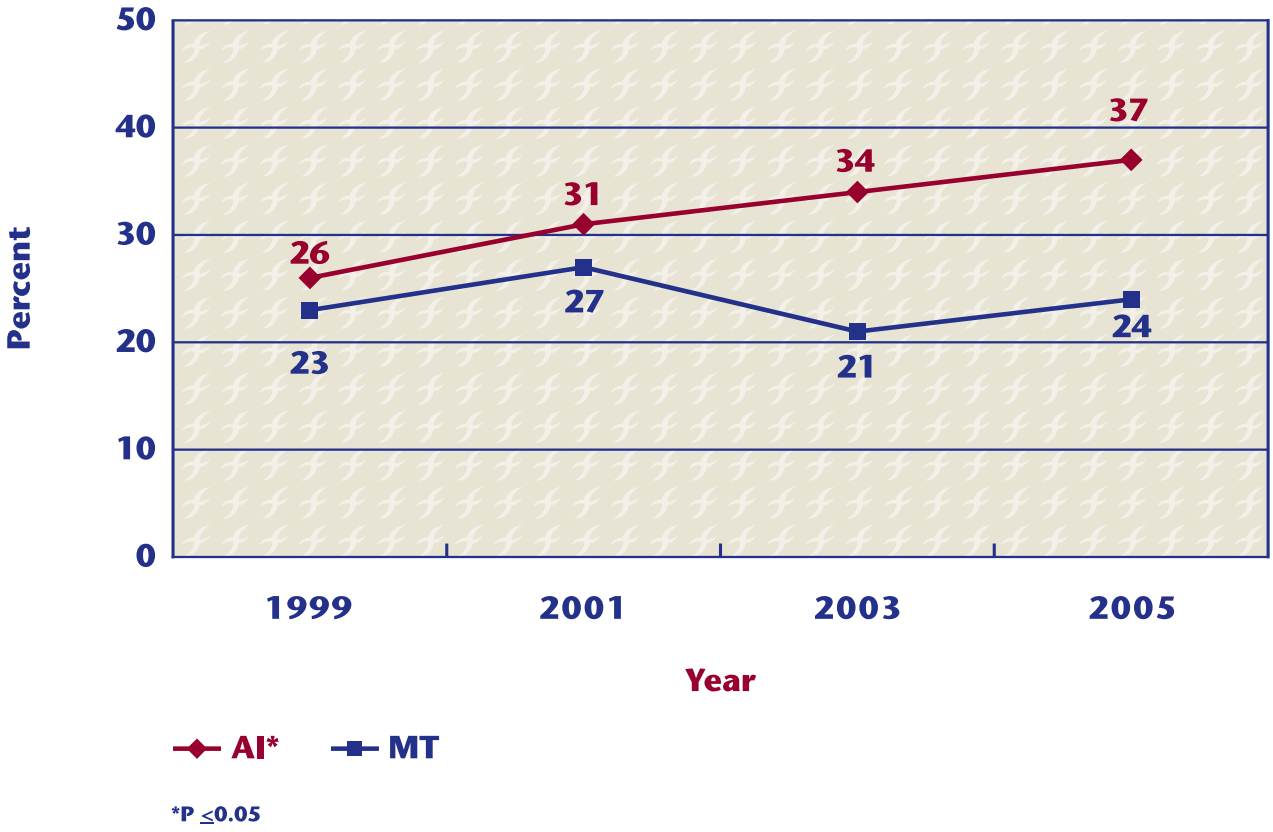


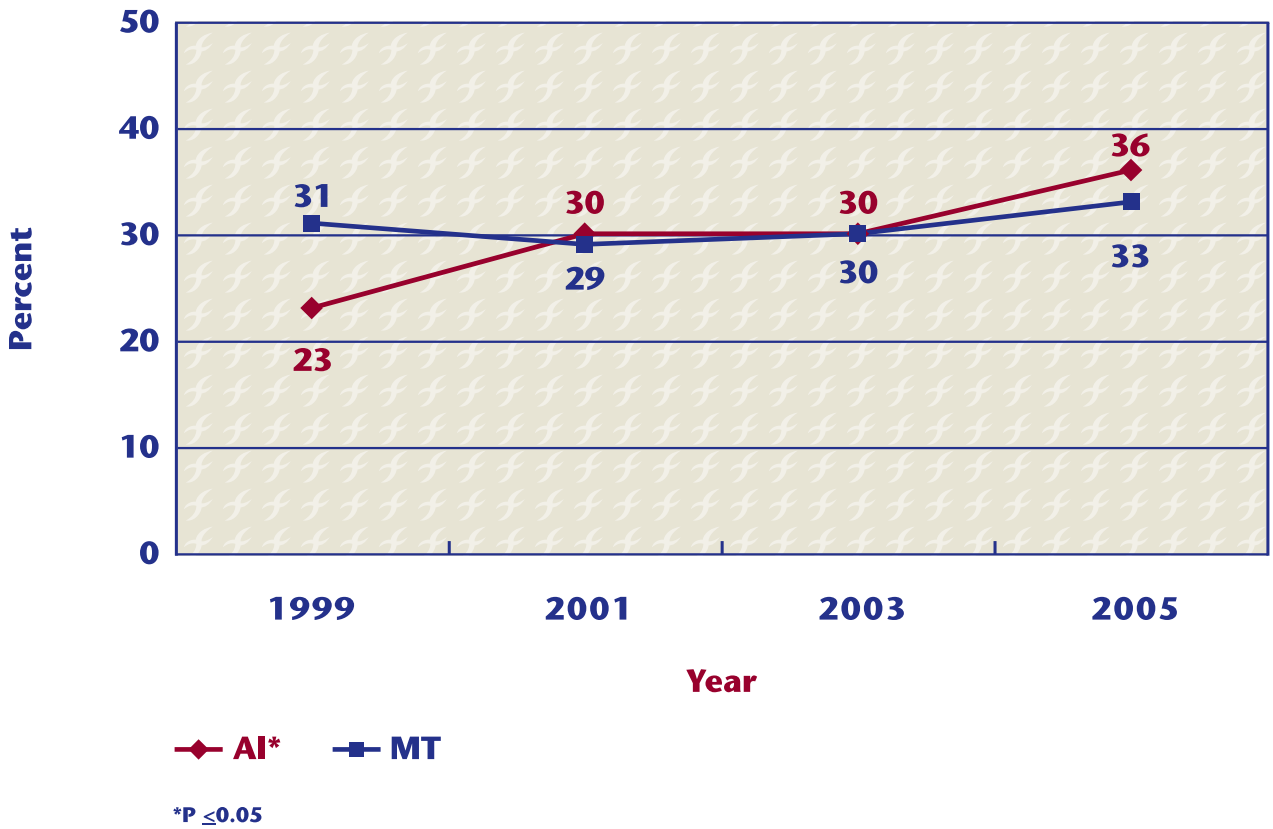
Figure 2. Prevalence of HIGH BLOOD PRESSURE for all Montanans and Montana American Indians, 1999-2005



Almost a quarter (24%) of all Montana adults reported a history of high blood pressure in 2005, and this rate remained relatively constant from 1999 to 2005. During the same time period, the prevalence of high blood pressure among Indians increased significantly from 26% in 1999 to 37% in 2005. In 1999, there was only a three percentage point difference in the prevalence of high blood pressure among Indians and all Montana adults (26% vs. 23%). However, in 2005, the prevalence of high blood pressure for Indian adults was one and one-half times higher compared to all Montanans (37% vs. 24%). (Figure 2)

From 1999 to 2005, the percent of Montana adults reporting history of high blood cholesterol increased slightly from 31% to 33%. Among Montana Indian adults, there was over a 10 percentage point increase in reported high blood cholesterol from 23% in 1999 to 36% in 2005. The increase in self-reported high cholesterol was statistically significant among Indian adults. (Figure 3)

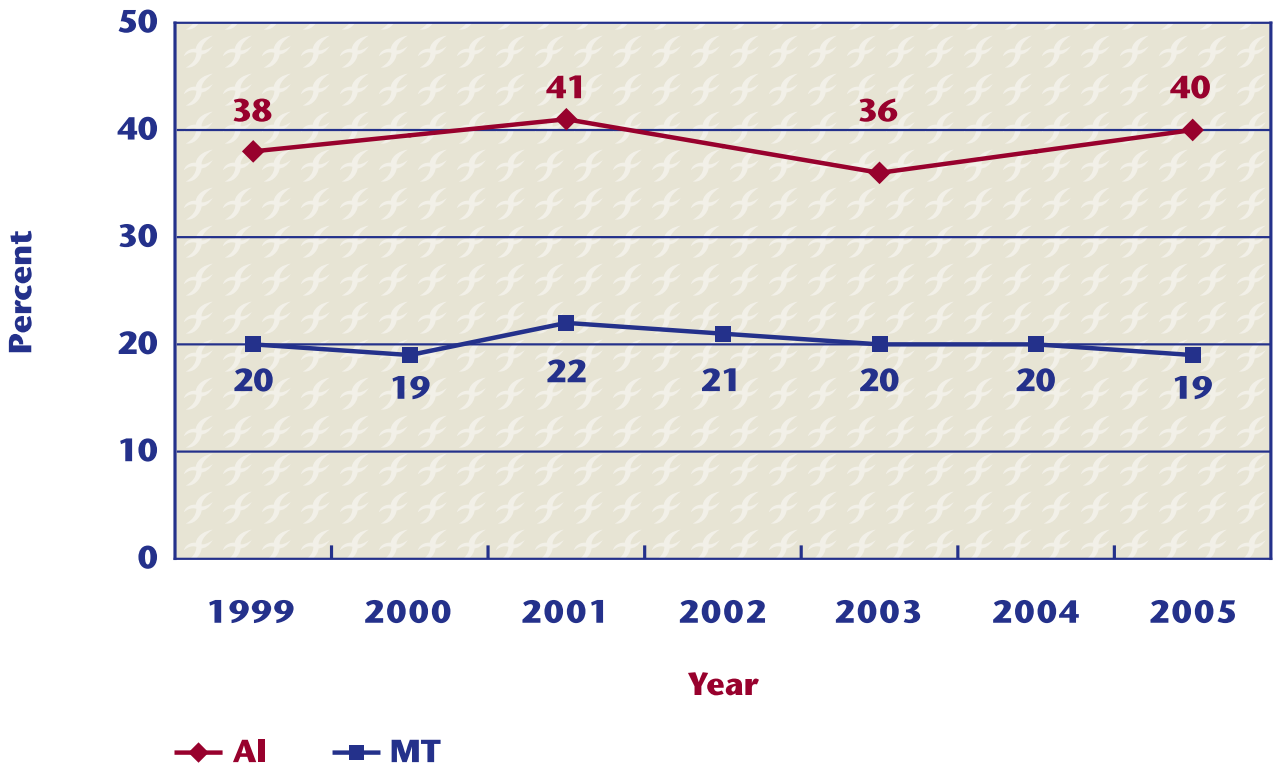
Figure 3. Prevalence of HIGH CHOLESTEROL for all Montanans and Montana American Indians, 1999-2005



*P ≤0.05

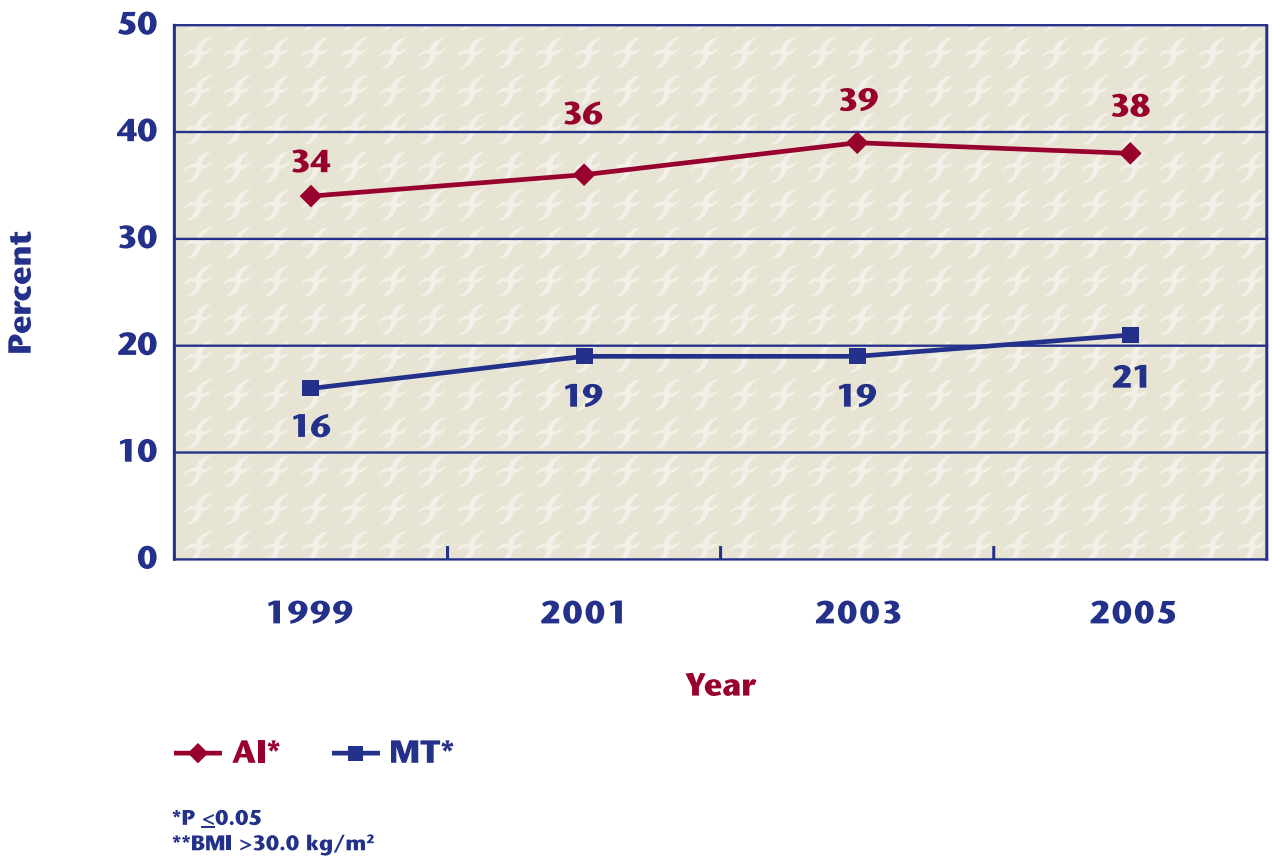
The percent of adults in Montana who reported current tobacco use remained relatively constant at 20% from 1999 to 2005. However, among Montana Indians during 1999 to 2005, the prevalence of current smoking remained unchanged and continued to be twice that of all Montanans. (Figure 4)

Figure 4. Prevalence of SMOKING for all Montanans and Montana American Indians, 1999-2005



The prevalence of obesity increased significantly from 1999 to 2005 among both Montanans statewide and Montana Indians. During this time period, the prevalence of obesity for Montana Indian adults continued to be almost twice that of all Montanans with a prevalence ranging from 34% to 38%. (Figure 5)

Figure 5. Prevalence of OBESITY for all Montanans and Montana American Indians, 1999-2005**



*P ≤0.05
**BMI >30.0 kg/m²

Table 1 shows the prevalence of the different types of cardiovascular disease reported by American Indians 45 years and older living on or near Montana's seven reservations for 2005, by sex. Overall, 10% of AI respondents reported experiencing a heart attack with significantly more men reporting a heart attack compared to women (14% vs. 8%). From 1999 to 2005, the trends in CVD overall, heart attack, stroke and angina remained relatively constant among Montana's adult Indian population. (Table 2) Among Indians 45 years and older with CVD, the percentage of those who reported 3-4 risk factors was one and one-half times higher in those with diabetes compared to those without diabetes. (Figure 6)

Table 1. Cardiovascular disease (CVD) among Montana American Indians 45 years and older, by sex, 2005

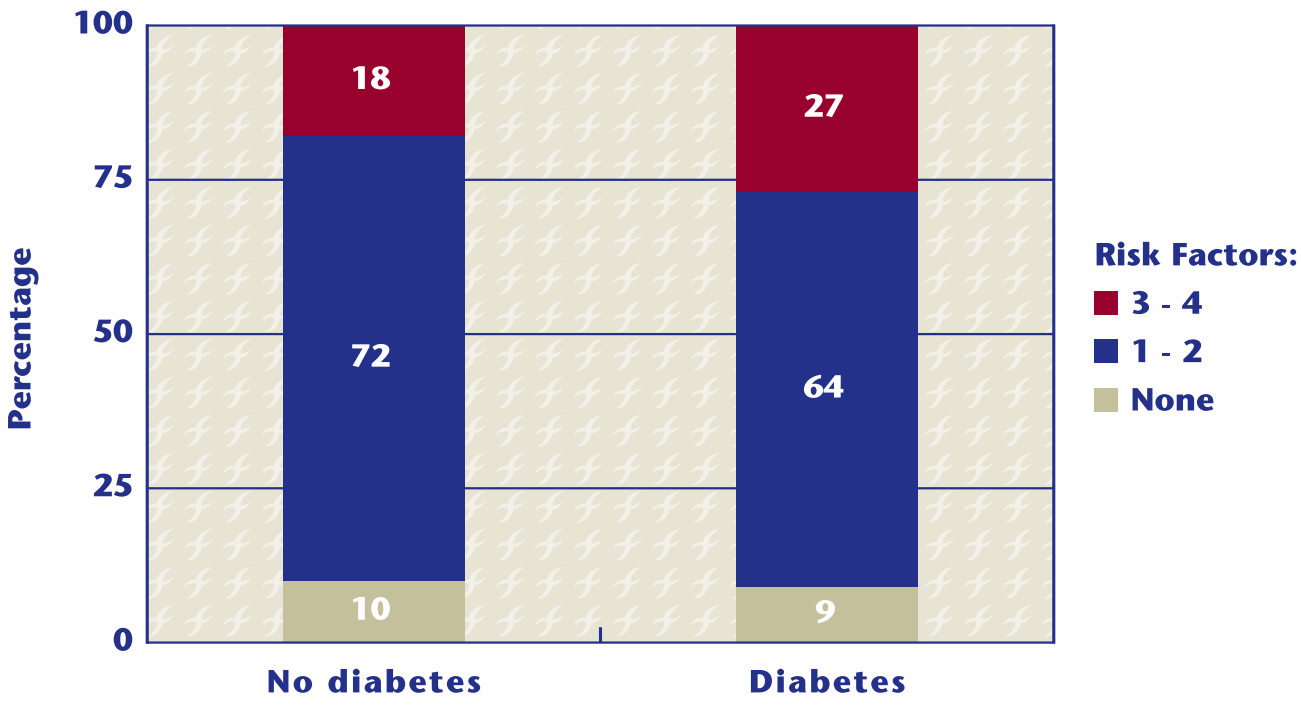
	Male	Female	Total
	% (n)	% (n)	% (n)
Heart attack	14 (30)*	8 (26)	10 (56)
Angina	10 (20)	6 (19)	7 (39)
Stroke	4 (8)	3 (11)	4 (19)

*P ≤0.05

Table 2. Cardiovascular disease (CVD) among American Indian adults, Montana, 1999, 2001, 2003 and 2005

	Time Period			
	1999	2001	2003	2005
	% (n)	% (n)	% (n)	% (n)
CVD	10 (95)	12 (116)	11 (110)	10 (101)
Heart attack	6	6	7	7
Angina	6	6	4	4
Stroke	2	3	3	2

Figure 6. Percentage of CVD risk factors* among Montana American Indians 45 years and older with CVD, by diabetes status, 1999 to 2005



*CVD Risk Factors Include: high blood pressure, high cholesterol, smoking and obesity

CONCLUSIONS

Despite the inherent limitations of self-reported data, the prevalence of high cholesterol, diabetes, and hypertension increased in American Indians in Montana over a seven-year period. American Indians' high smoking rates and smoking rates of all Montanans remained essentially unchanged. Obesity rates increased across the state and in the Indian communities. Overall, 10% of Indian respondents age 45 years and older reported having experienced a heart attack. Diabetes increased among Montana's Indians, and the percentage of Indians age 45 years and older with 3-4 cardiovascular risk factors was one and one-half times greater in those with diabetes compared to those without diabetes. The increasing risk factors are of concern. Recently, investigators from the Strong Heart Study developed a coronary risk prediction equation specifically for American Indians

30 years and older.[8] The risk calculator uses diabetes, smoking and other values to predict 10-year coronary heart disease risk and is available at the following website: *http://strongheart.ouhsc.edu/CHDcalculator/calculator.html*.

Because the data for all Montanans included some American Indians in the state, the disparity reflected in this report is likely an underestimate of the magnitude of disparate burden in the American Indian population in Montana. Several tribes in Montana are conducting special efforts to reduce the risk of cardiovascular disease in persons with diabetes. The data from this report shows how important these efforts will be to decrease the disparate burden of cardiovascular disease in the Indian communities across the state.

REFERENCES

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4. Howard BV, Best LG, Galloway JM, Howard WJ, Jones K, Lee ET, Ratner RE, Resnick HE, Devereux RB. Coronary heart disease risk equivalence in diabetes depends on concomitant risk factors. *Diabetes Care* 29:391-397, 2006.

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6. For further technical information, see – Montana Department of Public Health and Human Services, Montana Behavioral Risk Factor Surveillance System website. Available at: *http://www.brfss.mt.gov* accessed Jan 2, 2007.

7. For additional technical information, see – Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System website. *Technical Information and Data*. Available at *http://cdc.gov/brfss/technical_infodata/index.htm* accessed Jan 2, 2007.

8. Lee ET, Howard BV, Wang W, Welty TK, Galloway JM, Best LG, Fabsitz RR, Zhang Y, Yeh J, Devereux RB. Prediction of coronary heart disease in a population with high prevalence of diabetes and albuminuria: the Strong Heart Study. 113(25):2897-2905, 2006.

SAVE THE DATE!

MONTANA ASSOCIATION OF CARDIOVASCULAR & PULMONARY REHABILITATION ANNUAL CONFERENCE – KALISPELL REGIONAL MEDICAL CENTER, KALISPELL, MONTANA APRIL 12, 2007

Conference highlights include an update on the regional outcomes project, sleep apnea and cardiovascular disease, weight management in cardiac rehab - what works, what doesn't and more. The conference will be transmitted via telehealth to the Billings Clinic for those unable to make it to Kalispell.

For more information please call Joey Traywick (406) 657-4310 or April Luft (406) 238-6428.

SAVE THE DATE!

CARDIOVASCULAR HEALTH SUMMIT – GROUSE MOUNTAIN LODGE, WHITEFISH, MONTANA APRIL 13, 2007

Mark your calendar for the 6th Annual Cardiovascular Health Summit. The Montana Cardiovascular Health Program's professional conference will be held on Friday, April 13, 2007 at the Grouse Mountain Lodge in Whitefish, Montana.

For more information, contact Ava Griffenberg at (406) 444-5508 or e-mail agriffenberg@mt.gov.

SAVE THE DATE!

MONTANA CONFERENCE ON WORKLIFE WELLNESS – HOLIDAY INN – DOWNTOWN AT THE PARK, MISSOULA, MONTANA MAY 8-9, 2007

The Montana Cardiovascular Health program will host the 2nd Montana Conference on Worklife Wellness on Tuesday and Wednesday May 8-9, 2007 in Missoula at the Holiday Inn—Downtown At the Park. The year's program proves to be engaging for last year's attendees as well as for all new participants. Dr. Dee Edington, a recognized national leader in worksite wellness research will present, "Health Management as a Serious Business Strategy."

For more information, contact Chelsea Fagen at (406) 444-4105 or email cfagen@mt.gov.

SAVE THE DATE!

DIABETES PROFESSIONAL CONFERENCE – GREAT NORTHERN HOTEL, HELENA, MONTANA OCTOBER 11 – 12, 2007

The Montana Diabetes Project's professional conference will be held on Thursday and Friday, October 11-12, 2007 in Helena, Montana at the Great Northern Hotel.

For more information, contact Susan Day at (406) 444-6677 or e-mail sday@mt.gov.

WHAT ARE THE MONTANA DIABETES PREVENTION AND CARDIOVASCULAR HEALTH PROGRAMS AND HOW CAN WE BE CONTACTED?

The Montana Diabetes Control and Cardiovascular Health Programs are funded through cooperative agreements with the Centers for Disease Control and Prevention, Division of Diabetes Translation (U32/CCU822743-03), the Division of Adult and Community Health (U50/CCU821287-04) and through the Montana Department of Public Health and Human Services.

The mission of the Diabetes Control and Cardiovascular Health Programs is to reduce the burden of diabetes and cardiovascular disease among Montanans. Our web pages can be accessed at http://ahec.msu.montana.edu/diabetes/default.htm and http://montanacardiovascular.state.mt.us.

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